

REMARKS

This is in response to the Office Action that was mailed on December 4, 2003. Claim 3 is amended, without the introduction of new matter, in response to a suggestion from the Examiner. Claims 1-5 are in the application.

Claims 1-4 were rejected under 35 U.S.C. §103(a) as being unpatentable over JP 1257031 (Nitto) in view of EP 663025/US 5,698,300 (Wimmer). The rejection is respectfully traversed.

As explained in previous correspondence in this application, the Nitto reference discloses the bonding of tubular bodies made of a fluorine-containing resin, and a “**fluorine-containing resin powder (5) having thermal fusing property**” is applied to the outer peripheral surface of the end portion of said small-diameter tubular bodies (1)”. (Emphasis supplied.) See page 5, lines 10-12, of the translation provided by the USPTO. This means that the method of the Nitto reference requires the use of a fusing material – that is, a bonding aid – to bond the tubular bodies together. The Nitto reference provides no motivation to join two or more bodies made of modified PTFE together without using a material having thermal fusing property.

Wimmer describes the coefficient of thermal shrinkage of unsintered PTFE components (corresponding to “premolded parts” of the instant application). The Wimmer invention is a bicomponent molded article made of PTFE which is composed of two PTFE components. The Wimmer article uses the difference of coefficients of thermal shrinkage of the two PTFE components to cause the crimping of a film, tape, or fiber. Wimmer does not use the difference of coefficients of thermal shrinkage to join the PTFE components together. Instead, ***the two PTFE parts A and B in Wimmer are bonded under pressure prior to shrinkage.*** US 5,698,300, column 2, lines 41-55.

Therefore, there would have been no motivation to use the difference of coefficients of thermal shrinkage to join the premolded PTFE parts (components) as required by the present invention. That is, there would have been no motivation for a person of ordinary skill in the art to combine the Wimmer disclosure with the Nitto disclosure.

Incidentally, the modified PTFE used in the present invention is “molding powder”, which is prepared by suspension polymerization and is suitable for use in press molding. In contrast, the Wimmer PTFE is “fine powder”, which is prepared by emulsion polymerization and which is used in extrusion molding. Persons of ordinary skill in the art of fluororesins do not take teachings relating

to inventions using fine powder as being combinable with teachings relating to inventions using molding powder, since the two types of fluororesin powders are molded by significantly different molding methods.

Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nitto in view of Wimmer and GB 1,250,503 (Clabburn). The rejection is respectfully traversed.

Clabburn discloses a heat-recoverable (heat-shrinkable) produce, which is formed by crosslinking a polymer article such as a tube, converting the crosslinked polymer article by expansion to a deformed state, and then cooling the polymer article in its deformed state to a temperature below its crystalline melting point to retain the deformed state. Page 2, lines 21-53. Therefore, as can be seen from Clabburn's Examples, the shrinkage ratio of such a heat-shrinkable product is very large, for example, 2:1 (200%), 7:1 (700%), 1.45:1 (45%), 1.52:1 (52%), etc. The present invention does not made use of heat-shrinkable materials having such large shrinkage ratios.

In any case, as discussed in detail above, the Wimmer and Nitto references are not properly combined to suggest the principal features of the present invention.

Claims 1-4 were rejected under 35 U.S.C. §103(a) as being unpatentable over US 4,800,100 (Washizu) in view of Wimmer. The rejection is respectfully traversed.

The Wimmer teachings are discussed above.

Washizu discloses a flexible composite hose constructed such that a plastics inner tube is covered with an outer tube of heat shrinkage material. The heat shrinkable material of Washizu shrinks in the radial direction at a ratio of 1.3:1 to 4:1, that is, 30% to 400%. Such large shrinkage ratios can be achieved only with heat shrinkable materials, as discussed above in connection with Clabburn.

Furthermore, when Washizu used PFA as an outer tube material in Example 3, the outer surface of the inner tube was coated with a polyamide adhesive.

Therefore, Washizu is not relevant to the present invention, and is more remote from the present invention than is the Nitto reference. There would have been no motivation for a person of ordinary skill in the art to combine Washizu and Wimmer.

Conclusion

It is believed that a full and complete response has been made to the Office Action. Accordingly, the Examiner is respectfully requested to pass this application to Issue.


In the event there are any problems remaining in this application, the Examiner is invited to contact Mr. Richard J. Gallagher, Registration No. 28,781, at (703) 205-8008.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 CFR §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,
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